Acute Dyspnea in Critically Ill Patient

Essay

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Intensive Care

By

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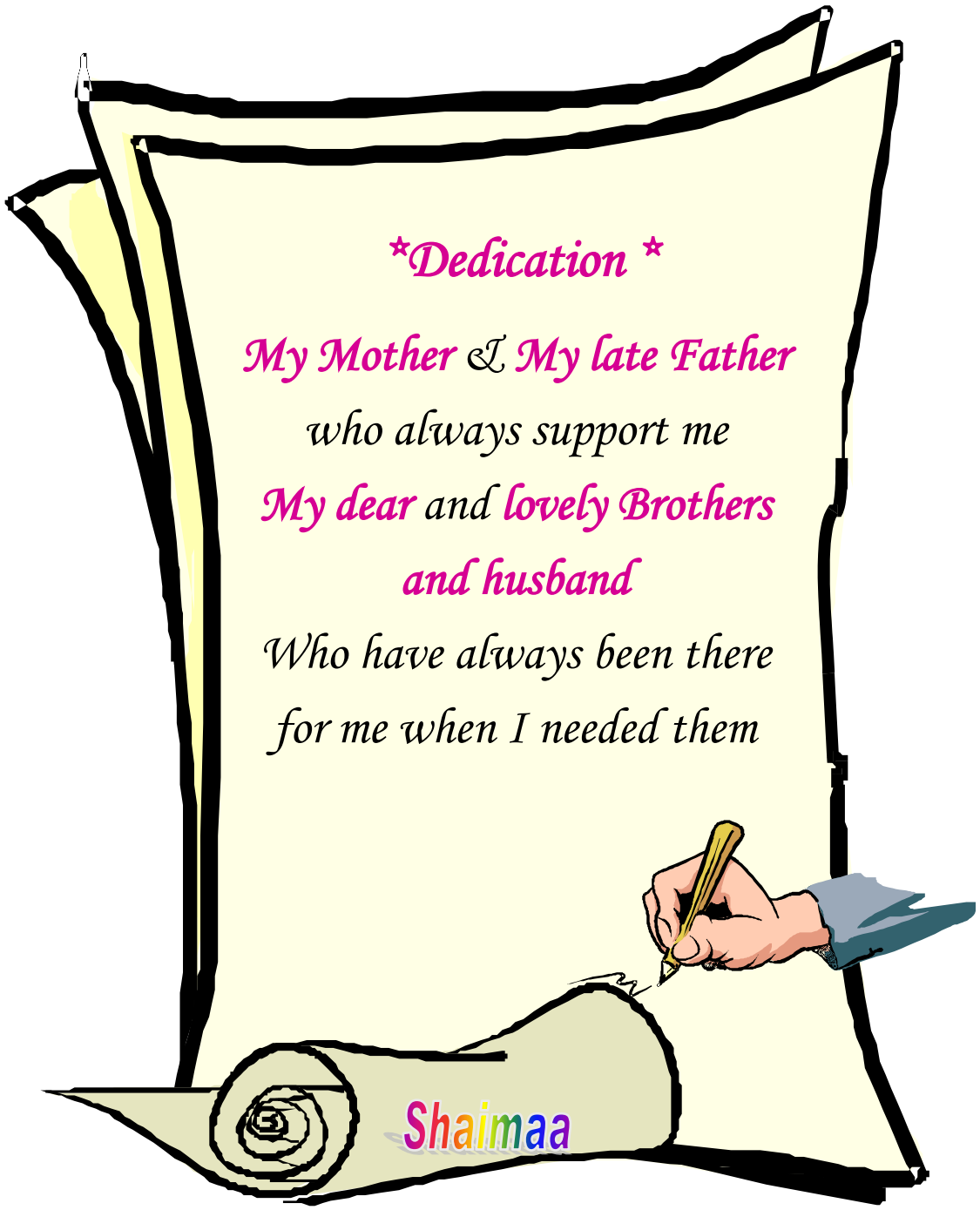
*Dedication *
My Mother & My late Father
who always support me
My dear and lovely Brothers
and husband
Who have always been there
for me when I needed them
Shaimaa

Contents

List of Abbreviations

ABC	**:**	Airway , breathing, circulation
ABG	**:**	Arterial blood gases
ACC	**:**	American college of cardiology
ACCF	**:**	American college of cardiology foundation
ACCP	**:**	American college of clinical pharmacy
ACE	**:**	Angiotensin converting enzyme
ADHF	**:**	Acute decompensated heart failure
AHA	**:**	American heart association
ARDS	**:**	Acute respiratory distress syndrome
ATS	**:**	American thoracic society
BNP	**:**	Brain natriuretic peptide
CAD	**:**	Coronary artery disease
CAP	**:**	Community acquired pneumonia
CF	**:**	Cystic fibrosis
CNS	**:**	Central nervous system
COPD	**:**	Chronic obstructive pulmonary disease
CRP	**:**	C reactive protein
CT	**:**	Computerized tomography
CTPA	**:**	Computerized tomography pulmonary angiography
CTPH	**:**	Chronic thromboembolic pulmonary hypertension

CXR	**:**	Chest x-ray
DLCO	**:**	Diffuse capacity for carbon monoxide
DVT	**:**	Deep venous thrombosis
ECG	**:**	Electrocardiogram
ECLS	**:**	Extracorporeal lung support
ECMO	**:**	Extracorporeal membrane oxygenation
ELISA	**:**	Enzyme linked immunosorbant assay
ESC	**:**	European society of cardiology
FBC	**:**	Full blood count
FEV	**:**	Forced expiratory volume
FIO2	**:**	Fractional inspired oxygen
FVC	**:**	Forced vital capacity
HF	**:**	Heart failure
HFOV	**:**	High frequency oscillatory ventilation
HFSA	**:**	Heart failure society of America
ICU	**:**	Intensive care unit
IDSA	**:**	Infectious diseases society of America
IGA	**:**	Immunoglobulin A
IVC	**:**	inferior vena cava
LBBB	**:**	Left bundle branch block
LIPS	**:**	Lung injury prediction score
LMWH	**:**	Low molecular weight heparin
LVEF	**:**	Left ventricular ejection fraction
MI	**:**	Myocardial infarction

MRA:	**:**	Magnetic resonance angiography
MRSA	**:**	Methicillin resistant staphylococcus aureus
NOAC	**:**	New oral anticoagulant
NTS	**:**	Nuclus tractus solitarius
P.E	**:**	Pulmonary embolism
PCI	**:**	Percutaneous cornary intervention
PCR	**:**	Poly chain reaction
PEEP	**:**	Positive end expiratory pressure
PEFR	**:**	Peek expiratory flow rate
PIOPED	**:**	Prospective investigation of pulmonary diagnosis
PSP	**:**	Primary spontaneous pneumothorax
RAS	**:**	Renin angiotensin system
RSV	**:**	Respiratory synctial virus
RTN:	**:**	Retrotrapzoid nuclus
RV	**:**	Right ventricle
SARS	**:**	Severe acute respiratory syndrome
SC	**:**	Subcutaneous
SNOS	**:**	S-nitrosothiols
SPECT	**:**	Single photon emission computerized tomography
SSP	**:**	Secondary spontaneous pneumothorax
STEMI	**:**	ST segment elevation myocardial infarction
TTE	**:**	Trans thoracic echocardiology

UFH	**:**	Unfractinated heparin
V\Q:	**:**	Ventillation perfusion
VATS	**:**	Video assisted thoracoscopy
VKA	**:**	Vitamin k antagonist
VMS	**:**	Ventral surface of medulla
VTE	**:**	Venous thromboembolism
WHF	**:**	World health federation

List of Tables

List of Figures

Introduction

Acute dyspnea is one of the main reasons of admission in ICU. It is the term which generally describes few sensations as frightening, not being able to get enough air. Although shortness of breath [dyspnea] is likely to be experienced differently by different people, it's often described as an intense tightening in the chest or feeling of suffocation. Depending on the cause, you may experience shortness of breath just once or have recurring episodes that could become constant. Very strenuous exercise, extreme temperatures, massive obesity and high altitude all can cause shortness of breath in a healthy person. Outside of these examples, shortness of breath is likely a sign of a medical problem ***(Bozkurt et al., 2003; Schwartzstein, 2013; Marx, 2010 and Rosenow, 2013).***

There are many causes of Acute Dyspnea in Adults like [Pulmonary Embolism, Pulmonary edema, Obstructed Airway (Foreign body, Epiglottitis), spontaneous pneumothorax, pneumonia, asthma or COPD myocardial infarction, massive lung collapse, ARDS,….] ***(Stulbarg, 2000 and Zoorob, 2003) .***

Evaluation of Acute dyspnea including immediate ABC management [emergency Airway management, emergency breathing management and emergency circulation management], then obtain intial vital signs

temperature, blood pressure, respiratory rate and oxygen saturation. Immediately triage unstable patients who have [Hypotension, Altered Level of Consciousness, Hypoxia, stridor or other signs of upper airway obstruction, arrhythmia, respiratory Rate >40 breaths per minute, Accessory muscle use with retractions and cyanosis], then Initial management of acute distress by administering high flow oxygen, treat and evaluate hypoxia if present and finally treatment of the specific cause ***(Braithwaite, 2002; Fangman, 2001).***

Differential diagnosis and early treatment is a clinical challenge for them that requires complex decision making in order to achieveing hemodynamic balance, improving functional capcity and decrease mortality.

Aim of the Work

The aim of this work is to discuss mechanism, differential diagnosis, physiology and management of acute dyspnea.

Pathophysiology of Dyspnea

The respiratory system is dependent upon adequate ventilation to supply oxygen, remove carbon dioxide, and help maintain acid-base homeostasis. Ventilation responds to changes in the arterial carbon dioxide tension ($PaCO_2$), arterial oxygen tension (PaO_2), and pH (Fig. 1), and may be modified in response to a number of mechanical and irritant stimuli arising from various structures within the thoracic cage, and probably from within muscles and joints during exercise ***(Kazemi et al., 2002).***

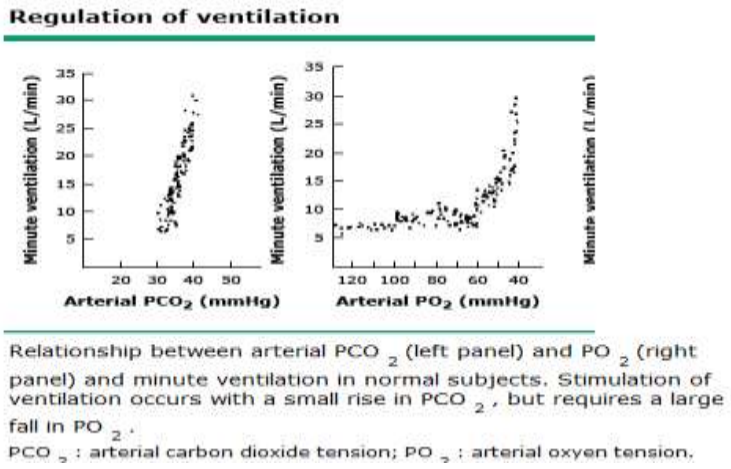

Fig. (1): Regulation o ventilation ***(Weiss et al., 1984).***

Broadly viewed, the respiratory control mechanisms respond to input from neural and chemical receptors. Respiratory centers in the brain integrate these inputs and provide neuronal drive to the respiratory muscles, which maintain upper airway patency and drive the thoracic